



King's Research Portal

DOI:

[10.1016/j.childyouth.2018.05.013](https://doi.org/10.1016/j.childyouth.2018.05.013)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Zhang, Y., Tanaka, E., Anme, T., Mori, S., Bradley, R., & Lau, J. Y. F. (2018). Japanese residential care quality and perceived competency in institutionalized adolescents: A preliminary assessment of the dimensionality of care provision. *Children and Youth Services Review*. <https://doi.org/10.1016/j.childyouth.2018.05.013>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

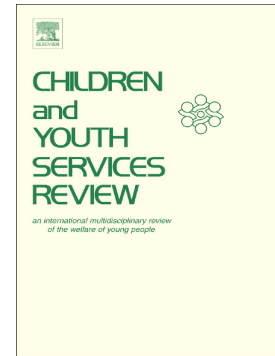
Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Accepted Manuscript

Japanese residential care quality and perceived competency in institutionalized adolescents: A preliminary assessment of the dimensionality of care provision

Yuning Zhang, Emiko Tanaka, Tokie Anme, Shigeyuki Mori, Robert Bradley, Jennifer Y.F. Lau



PII: S0190-7409(18)30093-8
DOI: doi:[10.1016/j.childyouth.2018.05.013](https://doi.org/10.1016/j.childyouth.2018.05.013)
Reference: CYSR 3828
To appear in: *Children and Youth Services Review*
Received date: 7 February 2018
Revised date: 9 May 2018
Accepted date: 10 May 2018

Please cite this article as: Yuning Zhang, Emiko Tanaka, Tokie Anme, Shigeyuki Mori, Robert Bradley, Jennifer Y.F. Lau , Japanese residential care quality and perceived competency in institutionalized adolescents: A preliminary assessment of the dimensionality of care provision. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Cysr(2017), doi:[10.1016/j.childyouth.2018.05.013](https://doi.org/10.1016/j.childyouth.2018.05.013)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Japanese residential care quality and perceived competency in institutionalized adolescents: A
preliminary assessment of the dimensionality of care provision

Yuning Zhang, MA¹; Emiko Tanaka, PhD²; Tokie Anne, PhD²; Shigeyuki Mori, PhD³; Robert
Bradley, PhD⁴; Jennifer YF Lau, PhD^{1,*}

¹Institute of Psychiatry, Psychology, & Neurosciences, King's College London

²Graduate School of Comprehensive Human Sciences, Tsukuba University

³Faculty of Letters & Konan Institute of Human Sciences, Konan University

⁴T. Denny Sanford School of Social and Family Dynamics and Department of Psychology, Arizona
State University

* Correspondence to Dr Jennifer Lau

Department of psychology

Institute of psychiatry, psychology & neuroscience

King's College London

16 De Crespigny park, SE5 8AF

Jennifer.lau@kcl.ac.uk

+44 20 7848 0678

Abstract

Although early institutionalization has been shown to have broad, detrimental effects on child developmental outcomes, there have been few attempts to systematically measure which aspects of the institution and caregiving environment associate with negative psychological outcomes. The current study uses a culturally and contextually modified early adolescent version of the Home Observation for Measurement of the Environment Inventory (EA-HOME-JP) in Japanese child welfare institutions (CWIs) to provide preliminary data on relevant variables in the caregiving environment that associate with domains of perceived self-competency. Forty-six children and young people ($Age_{mean}=13$ years 9 months) and their 35 primary caregivers from 11 CWIs were interviewed using EA-HOME-JP. Children and young people also self-reported on their perceived cognitive, physical, social competencies, and sense of self-worth. Participants within the same residential environments exhibited marked variation across each EA-HOME-JP subscale suggesting that the same rearing environment can be experienced differently by different individuals. Interestingly, EA-HOME-JP scores did not vary with care type (large-ward, middle-ward, and family-like). Instead, CWIs grouped within the same care type showed significant variation to one another on EA-HOME-JP subscales. Importantly, EA-HOME-JP scores, rather than care type, associated with aspects of competency (cognitive competency and sense of self-worth). As these findings are based on a small number of participants, they will require further replication in larger samples ascertained from other regions in Japan. Ultimately, these data may contribute to considerations over optimal packages of residential rearing in Japan.

Keywords:

HOME Inventory; Adolescent; Rearing environment; Residential care; Japan

Introduction

The long-lasting adverse effects of early institutionalization, as an extreme form of deprivation, on children's developmental outcomes have been established by many studies (Skeels, 1966; Sonuga-Barke et al., 2017; Vorria, Rutter, Pickles, Wolkind, & Hobsbaum, 1998; Zeanah, Smyke, Koga, & Carlson, 2005). However, more recent investigations have found that when comparing contemporary group residential care with other alternative out-of-home care packages such as foster care within high risk communities, these are not necessarily associated with worse outcomes (see (Lee, Bright, Svoboda, Fakunmoju, & Barth, 2011) for a systematic review). This discrepancy with prior findings has been attributed to differences within care packages (i.e. within institutions), as well as differences between them (i.e. between institutions and foster care) (Lyons, Terry, Martinovich, Peterson, & Bouska, 2001). It has also been suggested that institutional care can be as effective as non-institutional care if they meet children's risks and needs (De Swart et al., 2012). Yet, there is still little known about which specific aspects of the institutional rearing environment are most detrimental (McCall & Groark, 2015; van IJzendoorn et al., 2011; Woodhouse, Miah, & Rutter, 2018), and whether some aspects can actually protect against negative psychological outcomes (van IJzendoorn et al., 2011). Addressing these questions may have crucial implications for policies amongst countries that are still heavily reliant on residential care. The current study aims to develop a modified early adolescent version of the Home Observation for Measurement of the Environment (HOME) Inventory (Bradley, Caldwell, & Corwyn, 2003) in Japanese child welfare institutions (CWI), and provides preliminary data on whether the HOME Inventory is capable of picking up meaningful variance that explains adolescents' psychological outcomes.

Arguments that the detrimental effect of early institutionalization on children's developmental outcomes may not be simply due to the process of institutionalization, but rather the poor quality of care associated with residential care environments are not new (Tizard, Tizard, Joseph, & Cooperman, 1972). However, there is still a striking lack of systematic measures of different caregiving dimensions within the institutional environment (Woodhouse, Miah, & Rutter, 2018). Instead, most studies rely on "first or second hand narrative impressions and perceptions" as a global and rather crude measure of residential caregiving (van IJzendoorn et al., 2011, p.9). One possible reason for this gap is that care provision is multidimensional. As "hard"

tangible measures such as physical space, structure and/or type of building (e.g. family house, dormitory building), and caring capacity (e.g. number of children per ward/house, child-caregiver ratio) are more visible, these have often been used to evaluate the quality of residential care. Furthermore, in Japan, variations on these “hard” measures are often used to differentiate between different official categories of care. Specifically, in Japan the 5 types of residential care for children removed from their biological parents due to various adversities are distinguished largely on the basis of these “hard” characteristics. Thus traditional CWs with Large-wards accommodate 20 or more children per ward, with a 5.5:1 child-caregiver ratio, and children are grouped by age and gender. Group homes on the other hand, host no more than 6 children per home with a 3:1 child-caregiver ratio; children are still grouped by gender, but not age. In contrast, variations on less tangible, “soft” measures, such as the quality and nature of child-caregiver interactions (Vorria et al., 2003) and relationship (Mota & Matos, 2015), children's actual usage of resources regardless of provision, and even caregiver's own attachment representation (Mota & Matos, 2016), have been overlooked in care quality assessments and therefore categorization of different types of care. These “soft” qualities may often be “unobservable” (McCall & Groark, 2015), more difficult to define and measure, and also easily biased when using self-report methods. It is therefore unknown whether different care-types vary on ‘soft’ dimensions of caregiving, and how these ‘soft’ dimensions associate with variance on psychological outcomes during development.

A handful of studies either systematically measuring different aspects of care provision quality in association with positive outcomes in alternative care settings, or by promoting one or more aspect of caregiving quality in intervention studies of out-of-home care packages have been informative in explaining developmental outcomes (Crockenberg et al., 2008; Groark, McCall, Fish, & Whole Child International Evaluation Team, 2011; Groark, McCall, McCarthy, Eichner, & Gee, 2013; Johnson et al., 2010; Smyke et al., 2007; Vorria et al., 2003). Detailed assessment into dimensions of the caregiving context in Romanian orphanages found that caregiver's sensitivity, positive regard for the child, and attachment significantly associated with institutionalized infants' physical growth (Smyke et al., 2007). Similar results were also found through a randomized controlled trial in St. Petersburg baby homes, where promoting caregivers' positive socioemotional engagement with infants and their responsiveness to child-directed behavior was associated with better outcomes in infants' physical

development (Crockenberg et al., 2008). Although these results were not replicated in a study based on Central American CWIs (Groark et al., 2013), the use of an in-depth dimensional measure of the rearing environment has nonetheless provided insights into the quality of these Central American CWIs in comparison with equivalent CWIs in Greece (Vorria et al., 2003). Other studies have focused on children's perceived group climate, defined as the quality of the social and physical environment provision that is sufficient and necessary for physical and mental well-being (e.g., perceived support from staff) (Stribosch, Van der Helm, Stams, & Wissink, 2016; Ten Brummelaar et al., 2017). Results showed that positively perceived group climate was associated with positive outcomes of the children such as better coping, more empathy, and less aggression (Heynen, van der Helm, Cima, Stams, & Korebrits, 2017; van der Helm, Klapwijk, Stams, & van der Laan, 2009). However, it is possible that children with children with better psychological and social adaptation rating this group climate more positively, confounding this association.

Despite these initial promising data, there is nonetheless inconsistency over which "soft" caregiving dimensions associate with better developmental outcomes, suggesting the need for further replications across CWIs. Also, a major limitation of existing studies is the focus on early developmental outcomes. Hence, evidence gathered so far has placed great emphasis on physical and cognitive outcomes of early infant development, while other psychological outcomes have been overlooked, particularly those aspects of social and emotional development that emerge during later childhood and adolescence. Moreover, because for early development in infancy, attachment plays an essential role, past research has focused mainly on the sensitivity and warmth of caregiving. This has been at the expense of other aspects of caregiver interactions such as how caregivers act as role models in daily interactions, how they help to facilitate and regulate activities in daily life, and how children's self-sufficiency is fostered to prepare them to become successful care leavers and competent individuals for the society, which can become increasingly important with development, particularly during adolescence. This gap in the literature is particularly relevant considering that for most countries, the age of children currently in care and the age of children first entering care have shifted away from primarily infancy, and spread out to all ages groups (Browne, 2009; Japan Ministry of Health, Law and Welfare, 2016; Vorria et al., 2003; Zhang, Fukui, & Mori, 2016). There is therefore a lack of objective tools to assess which caregiving dimensions beyond "hard" measures are

important for promoting positive social and emotional outcomes in early youth. What is needed is an assessment procedure that is possible to yield comparable data across CWIs and even other out-of-home care packages across countries and different cultural contexts to focus research efforts and policy considerations. Such assessments need to be (1) systematic in capturing distinct dimensions of “soft” measures of rearing environments beyond “hard” measures; (2) appropriate for older children and adolescents; and (3) can link these to developmental outcomes beyond physical and cognitive, but also social-emotional functioning. One such instrument is the Home Observation for Measurement of the Environment (HOME) Inventory (Bradley & Caldwell, 1984a), which was also used in St. Petersburg-USA Orphanage Research project.

The HOME inventory has been used widely across countries and various settings, to assess the quantity and quality of stimulation and support to the child in his/her everyday care environment. Moreover, each version of the HOME inventory is designed to describe the home environment in terms of how it is experienced by a child at a particular developmental stage. For example the Early Adolescent version (EA-HOME; Bradley et al., 2000) is designed to measure the quantity and quality of stimulation, support, and structure provided to adolescents in the home environment. The administration procedure is highly standardized; and carried out by trained interviewers through semi-structured interviews with both the parent and child present in their home. All versions of the HOME inventory have been well-validated, with the total, as well as the sub-scale scores being linked with IQ and cognitive competency (Bradley & Caldwell, 1980), academic achievement (Bradley & Caldwell, 1984b), behavioral well-being (Bradley et al., 2001), and attachment security (Zevalkink, Riksen-Walraven, & Bradley, 2008) across ethnic and cultural groups. Moreover, there are domain-specific associations with each subscale adding to their validity. For example, using the EA-HOME, Learning Material subscale has been found to correlate highly with academic achievement and self-efficacy relating to school achievements, and parental modelling significantly correlated with self-efficacy over family relationships (Bradley et al., 2000).

The primary goal of present study is to quantify dimensions of out-of-home care provision across Japanese CWIs caring for those transitioning into adolescence or young adulthood, using the modified Japanese version of EA-HOME (EA-HOME-JP). We will explore whether official categories of care type in Japan that are

differentiated based on “hard” measures (e.g., structure of the facility, child-caregiver ratio, group size) also reflect variation on “soft” qualities of care provision (as represented by the 7 dimensions of care environment reflected in the EA-HOME-JP). We will also investigate how measures of these “hard” (care type) and “soft” (EA-HOME-JP subscales) characteristics correlate with children’s self-perceived competencies. Before testing more specific hypotheses, we pose two questions relating to differences in “soft” measures across official categories of out-of-home care packages in Japan: (1a) does the mean score of EA-HOME-JP subscales differ across official care type (large-ward, middle-ward, and family-like CWIs), which have to date been defined by the Japanese government on “hard” measures of size and structure only? (1b) Do CWIs that are grouped as belonging to the same official care type (large-ward, middle-ward, and family-like CWIs) vary significantly in their provision of “soft” characteristics, measured using EA-HOME-JP? Next, we investigated whether care type and EA-HOME-JP scores each significantly associated with participants’ perceived self-competencies? Based tentatively on prior findings, we predicted that adolescents’ self-perceived competency scores would associate significantly with EA-HOME-JP score. Specifically, we hypothesised that a) dimensions related to learning materials and caregivers modeling will predict children’s cognitive competency, b) dimensions related to family companionship and physical environment will be related to children’s self as well as social competency, and c) regulatory activities and fostering self-sufficiency will be associated with adolescents’ sense of self-worth.

Method

Sampling Procedure

Participants of this study are a sub-sample of the Japanese Jidoyogoshisetsu (Translate: child welfare institution) Study (JJS) that began in 2010. The aim of JJS was to examine the psychological wellbeing of children living in CWIs in Japan. Ethical approval for the study was granted from Konan University in 2011¹. The initial

¹ We sought ethical approval from Konan University Ethics Committee, which operates based on the “Regulations concerning research on human beings at Konan University”. This application clearly stated the aim and procedure (e.g., consenting procedure, testing procedure) of the study, as well as outlining possible protocols in place for dealing with any possible complications and emergencies arising from participation in the research study. As is standard in assessing young people, consent from a legal guardian is required for those under 18 years. In our sample, the legal guardian was the state-run institution. Therefore we sought consent from the institution directors, as well as keyworkers. As data was collected on children and young people, to have them be completely aware of what data had being collected, and to be empowered, we also sought assent from each participant. Before consent and assent forms were signed, we explained the purpose of the

sample consisted of 457 children and young people from 24 CWIs, for which the recruitment involved contacting 28 child welfare CWIs from Hyogo (19), Aichi (2), Fukushima (1) and Tokyo (6). Of these, 3 (2 from Aichi, 1 from Hyogo) declined, and 1 (from Fukushima) was excluded given that the 3.11 Tsunami in 2011 was thought to increase mental health problems in children in this region over other regions. Amongst a total number of 1,295 children from 24 CWIs, 457 met the inclusion criteria of: (1) in their pre-adolescence and/or adolescence, (2) been in care for at least 2 weeks, and (3) not undergoing legal proceedings about placement, and (4) available on the day of data collection.

Two years later in late 2015, 48 adolescents from the Hyogo CWIs (N=354) were randomly selected, and both the adolescent and their key caregiver were invited to participate in the current study on developing the EA-HOME-JP. Participants were selected so that we had relatively equal numbers of males and females in each age bracket using the following procedure: all 354 participants from the larger sample (but only the Hyogo) were first divided into 16 gender-by-age groups (10-11 year old boys, 11-12 year old boys, 12-13 year old boys, 13-14 year old boys, 14-15 year old boys, 15-16 year old boys, 16-17 year old boys, and the same age groups for girls). We wanted to ensure that our sample was broadly representative of different age and gender groups to minimize any confounding effects of these demographic variables on outcomes. Once divided, all participants in each group were then assigned a random number using a random sequence generator, and the first 3 participants were selected into the sub-sample to be invited to the current study. Although all agreed to participate, due to difficulties arranging visiting schedules between the interviewers and assigned participants, only 46 children (aged 10 to 17 years) and their 35 assigned key caregivers from 11 CWIs (denoted A-K) participated. Consent forms from the CWI directors and caregivers, as well as assent forms from the children and young people were

study, and informed participants the list of information about them that we would be seeking, including information on their care history and referral reasons from keyworkers. We also made clear that all young people could withdraw from the study at any point without giving a reason and without affecting their care arrangements. All this information was given in the form of age appropriate information sheets (8 to 12, 12 to 18 years old). These also included the detailed contact information (physical address, mobile numbers, and email addresses) of the project manager, and principle investigators. Although none of the measures taken as part of the study were thought to be distressing, nonetheless, we were mindful of any changes in mood as a result of the assessments. While participants were told that all information they gave us was confidential, we also informed them that any information that gave us concern for theirs or others' safety would not be treated confidentially.

obtained for this sub-study prior to data collection following an explanation of the study. Of note, the minimum number of participants from any one CWI was 1 while the maximum was 10.

Participants in this selected sub-sample did not differ from the larger JJS study sample on age [$t(455)=1.05$, $p=.29$], gender [$\chi^2(1, n=457)=1.11$, $p=.29$], age of removal from biological family [$t(380)=-1.47$, $p=0.14$], and length in current care [$t(435)=-0.48$, $p=.63$].

Measures

Demographic.

Caregivers were asked to report on the following: (1) the child's date of birth, from which the child's age at the time of study was calculated, (2) the child's gender.

Care type.

Caregivers reported the official type of care that the child was currently housed: large-ward CWI (cares for more than 20 children per ward), middle-ward CWI (cares for 13-19 children per ward), small-ward CWI (less than 12 children per ward), group home (less than 6 children per ward), unit care (less than 8 children per ward), and family home (less than 6 children per ward) (see Supplementary Figure 1). Given policy reforms that favored family-like CWIs (smaller child-caregiver ratio, and more family-like space settings) over larger-scale CWIs, we later collapsed all small family-like care facilities together, including small-ward CWIs, group home, unit care, and family homes, and 3 official types of care were compared against one another in the final analysis: large ward, middle ward, and family-like CWIs.

Dimensions of residential care environment.

A Japanese version modified for residential care settings of EA-HOME was used for the assessment of different dimensions within the care environment.

The original EA-HOME includes 60 items over 7 subscales that are rated dichotomously (yes=1, no=0). The 7 subscales are: (1) Physical Environment evaluates whether or not the physical environment is safe,

spacious, and age appropriate; (2) Learning Materials indicates the time and resources dedicated to children's learning and development; (3) Modeling looks at whether or not the caregiver is acting as a positive role model for the adolescent; (4) Fostering Self-Sufficiency reflects the caregiver's effort to raise the adolescent to become self-sufficient, which is very important for adolescents given the increasing responsibility and complexity of their social life; (5) Regulatory Activities measures the rules and regulations a caregiver sets for the adolescent while showing them that these limitations are there due to love; (6) Family Companionship gathers evidence that the family carries out routines and social activities as a group, and that the adolescent is part of this active family; (7) Acceptance indicates a positive caregiver-child interaction.

The development of the Japanese version of EA-HOME (EA-HOME-JP) involved three stages: (1) translation, (2) modification, and (3) training of home visitors. During the first stage, following initial contact with the original author of EA-HOME Robert Bradley (RB) in 2010, translation and back-translation were carried out by individual translators who were native in the target language and fluent in the base language. The first and third author then independently summarized the differences between the back translated EA-HOME and the original EA-HOME, and the most appropriate Japanese term for these disagreements were then discussed further in research meetings. Any difficulties in this process (particularly whether the translated items reflected the meaning of the original item) were discussed with RB. Any items that were discrepant were returned to translators for another round of translation and back translation. Three iterations of translation and back-translation occurred in total.

At modification stage, our goal was to establish that the Japanese version of EA-HOME was appropriate for the Japanese out-of-home care environment and more generally, was culturally-sensitive for Japan. All modification and adjustments were discussed at research meetings consisting of academic researchers, clinical psychologists, and CWI caregivers, and discussed further with RB before final adjustments were made. This resulted in replacement and rephrasing of original items, as well as incorporation of new items. Examples of replacement of and re-phrasing were changing "home" to "CWI", and "parent" to "caregiver", and replacing the item "4.95 m2" with "Adolescent has an *ibasho* (a place where participant feels safe and belonged) in the home

environment". For more information on the modification made to each items, please contact the first author for details. During this process, two versions of EA-HOME-JP were produced, and both were tested with children who were not part of the JJS study. Feedback from these volunteers was taken into consideration. The final version of EA-HOME-JP consisted a final list of 63 items (compared to 60 in the original measure) over 7 subscales: Physical environment (PE, 7 items), Learning materials (LM, 8 items), Modelling of caregiver (MD, 9 items), Fostering self-sufficiency (FS, 12 items), Regulatory activities (RA, 10 items), Family companionship (FC, 8 items), and Acceptance (AC, 9 items).

During the last training stage, we first produce a detailed, systematic, and culturally appropriate interview procedure manual for the purpose of this study as well as future use of the EA-HOME-JP for other researchers. HOME interviewers were selected from 18 child care professionals from the 18 Hyogo CWIs as part of the public involvement plan for the research funding. These professionals were independent from the JJS study, and were invited to some but not all of the research meetings for the measurement development phase, during which they obtained detailed knowledge of the HOME inventory. By the end of the year, five interviewers were selected to carry out the data collection. Training sessions for EA-HOME-JP Interviewers were carried out monthly in 2014 over the course of a year. These trainings sessions had three aims: (1) to administer the EA-HOME-JP in a standardized manner, (2) to reach high consistency in the scoring of each individual items across all interviewers, and (3) to reduce biases favoring the quality of the care environment when carrying out their evaluation. The last aim was emphasized by providing information and training over the importance of the family context in rearing environments. The first few sessions focused on familiarizing individuals with the assessment procedure through watching the standard videos of the administration of the measure. After that, the trainees carried out practice sessions and recorded their own interviews. These recordings were then used for the following training sessions: one recording was disseminated before each training session, and each interviewer rated the recorded interview independently. Scoring for each individual item were then discussed and revised during the training session, until all interviewers reached 96% agreement with the first author, who had been trained by RB and his team in Arizona.

Data collection was carried out by two interviewers per visit. One of the interviewers made initial contact through telephone with the CWI director as well as the caregiver of the target child, during which an appropriate time for visitation was discussed and set. For each interview, there were always two interviewers in attendance. Although each interviewer scored the same interview independently, a final score on each of the EA-HOME-JP sub-scale scores was assigned based on the two interviewers' discussion and agreement, consistent with training. The standard scoring procedure of HOME inventory was applied: each item was rated dichotomously immediately after the home visit, and the sum of items within each sub-scale forms the sub-total score for that dimension, and sum of all items forms the total EA-HOME-JP score.

Institutionalized children's psychological well-being.

To be consistent with prior validation research of the EA-HOME (Bradley et al., 2000), we chose the Perceived Self-Competency Scale for Children (PSCS-C; Sakurai, 1992), which was developed and validated in Japan, as a measure of adolescents' psychological well-being. It consists of 40 items and 4 subscales (cognitive competency, social competency, physical competency, and self-worth), with 10 items in each subscale. Each item was rated on a 4-likert scale (1 = not true for me, 4 = True for me). Sum of items for each subscale forms the subtotal score for that subscale (ranges from 10 to 40), and a total competency score is calculated by summing up all item scores (ranges from 40 to 160). The internal consistency was .83, .81, .91, and .83 for the cognitive, social, physical, and self-worth subscales respectively. Our data showed similar internal consistency cognitive ($\alpha = .77$), social ($\alpha = .76$), physical ($\alpha = .87$), and self-worth ($\alpha = .77$) subscales, with corrected item-total correlation coefficients varied between .12 and .68.

Statistical analysis

Data analysis was carried out with SPSS (version 24.0) in three major steps.

Step 1: EA-HOME-JP item selection.

Although the purpose of the present study was not to validate the EA-HOME-JP, which requires a much bigger sample size, our first step of analysis was nonetheless to inspect the variability of each item and whether

items generally correlated with each other. Since the HOME inventory is used as a screening tool, and as there are some aspects of the physical caregiving environment that are legally-regulated in Japan, some items did not show much variability and were therefore dropped. Item elimination was also determined based on the item's relationship to the total scale score (Item-total correlation) and internal consistency (Cronbach's Alpha if item deleted). Selected items were averaged to produce a proportion score for each EA-HOME-JP subscale, so it improved the internal consistency of each subscale of EA-HOME-JP and reduce measurement error.

Step 2: Descriptive statistics.

To describe the study sample and variables, we calculated means and standard deviations across individuals in terms of age, time spent in care, PSCS-C subscale scores, as well as the 7 subscales of EA-HOME-JP. Note, that in order to make EA-HOME-JP scores comparable across 7 sub-scales for clarity, we calculated the proportion score for each subscale using the following procedure: subscale total score (sum of the score of each item within the subscale) divided by number of items. To illustrate variation across individuals belonging to the same residential care environment on each of the 7 subscales of EA-HOME-JP radar charts were plotted, but only for those where at least three adolescents participated in the study, and participants with a missing subscale score on any of the 7 subscales were not included in the radar chart. We also examined the normality of data using K-S tests, to determine the type of analysis for hypothesis testing.

Step 3: Addressing research questions and hypotheses.

The research questions and hypotheses proposed earlier were tested.

(1a) EA-HOME-JP score differences by care type.

To address the research question of whether the mean score of each EA-HOME-JP subscale would differ across the three types of care (large-wards, middle-wards, family-like CWIs), we compared mean scores for all individuals belonging to the 3 large-ward CWIs (Home A, Home D, and Home F), versus those belonging to the 2 middle-ward CWIs (Home B and Home E), and the 2 family-like CWIs (Home G and Home E).

(1b) EA-HOME-JP score differences by home that are categorized as the same type of care.

To address the research question of whether CWIs that are grouped as belonging to the same care type vary significantly in their EA-HOME-JP scores, we assessed at the CWI level, whether CWIs classified as belonging to the same category of care type varied on each of the 7 EA-HOME-JP subscales. Specifically, we compared mean scores again using a series of one-way ANOVA of individuals belonging to each of the 3 large-ward CWIs (i.e. A versus D versus F); using independent sample t-tests of individuals belonging to each of the 2 middle-ward CWIs; (i.e. B versus E) and individuals belonging to each of the 2 family-like CWIs (i.e. CWIs G versus E).

(2) Associations between care type and EA-HOME-JP subscales on children's psychological outcomes.

To address the last research question of whether both 'hard' (care type) and 'soft' (EA-HOME-JP) provision of residential care associate with children's psychological well-being, we first performed a series of one-way ANOVA to assess the differences in children's self-perceived competency across three different types of care. Next, a series of non-parametric correlation analysis were performed to examine the relationship between EA-HOME-JP subscales and children's perceived competency.

Results

As shown in Table 1, adolescents were aged between 10 years 2 months and 17 years 8 months (Mean = 13 years 9 months, SD = 1 year 10 months). Around half (n = 24, 52.2%) were girls. Total time spent in care of all participants ranged between 2 years 10 months and 15 years 8 months (Mean = 7 years 2 months, SD = 3 years 4 months) (Table 1).

Step 1: EA-HOME-JP item selection.

Out of 63 original items, 31 together demonstrated satisfactory degree of internal consistency for each subscale: .59 (Learning materials, 5 items), .55 (Modelling of caregiver, 7 items), .60 (Fostering self-sufficiency, 8 items), .54 (regulatory activities, 6 items), and .52 (Family companionship, 5 items) (Supplementary Table 1). Notably, two subscales (i.e., physical environment – 7 items, acceptance – 9 items) were not considered in further analysis due to lack of variability across many individuals items (that is, all children would have scored 1

for the presence of the feature). Participants' proportion scores for each of the 5 EA-HOME-JP subscales used in the next steps of analysis are presented in Table 1.

Step 2: Descriptive statistics

Demographics and care characteristics of all participants are summarized in Table 1. Twenty-five (54.3%) participants were living in traditional large-ward CWIs, 12 (26.1%) were in middle-ward CWIs, and 9 (19.6%) children lived in family-like wards or facilities with 6 or less children living together.

Mean scores of each of the perceived self-competency subscales across all participants are also shown in Table 1. The radar charts illustrating intra-CWI inter-individual variation (variation across individuals belonging to the same residential care environment) in the 5 EA-HOME-JP subscales are shown in Figure 1. Even though they had been living in the same institution for more than 2 years, children showed marked variation in their EA-HOME-JP subscales scores.

All 5 EA-HOME-JP subscales, Learning material, ($D(34) = -0.21, p < .01$), Modelling of caregiver ($D(34) = 0.19, p < .01$), Fostering self-sufficiency ($D(34) = 0.18, p < .01$), Regulatory activities ($D(34) = 0.21, p = .001$), and Family companionship ($D(34) = 0.26, p < .001$), and children's perceived social competency ($D(34) = 0.11, p < .05$) were significantly non-normal. Non-parametric tests were used where appropriate in the next steps of analysis.

Step 3: Addressing research questions and hypotheses.

(1) Differences on EA-HOME-JP subscale scores across Care type.

A series of Kruskal-Wallis H test comparing the three CWI types (large-ward CWIs, middle-ward CWIs, family-like facilities) for each of the 5 subscales of EA-HOME-JP revealed a significant difference between groups only on Learning Materials ($\chi^2(2) = 7.17, p = 0.03$). Results are shown in Table 2. Tukey post-hoc tests revealed that large-ward CWIs (Mean = 0.41, SD = 0.28) scored significantly lower than family-like facilities (Mean = 0.71, SD = 0.28) on their ratings on this scale. Other EA-HOME-JP subscale scores did not differ significantly by care type (Table 2).

(2) Differences on EA-HOME-JP subscale scores within Care type, across CWI.

A series of Kruskal-Wallis H test compared three CWIs categorized as large-ward CWI. This showed significant differences in Learning Materials ($\chi^2(2) = 17.21, p < .001$), Regulatory Activities ($\chi^2(2) = 10.69, p = .005$) and Family Companionship ($\chi^2(2) = 7.36, p = .03$). Results are shown in Table 3. Tukey post-hoc tests revealed that Home F scored significantly higher in Learning Materials (Mean = 0.87, SD = 0.24) than Home A (Mean = 0.46, SD = 0.16) and Home D (Mean = 0.11, SD = 0.11). Home D scored significantly higher in Regulatory Activities (Mean = 1.00, SD = 0.00) than both Home A (Mean = 0.73, SD = 0.17) and Home F (Mean = 0.61, SD = 0.17), and Home D also scored significantly higher in Family Companionship (Mean = 0.97, SD = 0.08) than Home A (Mean = 0.71, SD = 0.26) (Table 3).

Within middle-ward CWIs, significant differences between CWIs were detected on two HOME subscales through Mann-Whitney U test: Learning Material ($U = 0.00, p < .001$) and Modelling of Caregiver ($U = 1.50, p < .05$) (Table 3). Home E scored significantly higher on Learning Material (Mean = 0.80, SD = 0.20) and Modelling of Caregiver (Mean = 0.83, SD = 0.14) than Home B on these same sub-scales (Mean = 0.23, SD = 0.08) and (Mean = 0.71, SD = 0.20) respectively. Within family-like CWIs, Home E had a significantly higher score on Fostering Self-sufficiency (Mean = 0.88, SD = 0.16) than Home G (Mean = 0.38, SD = 0.00; $U = 0.00, p < .005$) (Table 3).

(3) Association between Care type versus EA-HOME-JP and Children's Psychological Wellbeing.

There were no significant differences across the three types of care assessed on all domains of perceived self-competency: Cognitive competency: Mean (SD) large = 24.59 (5.43), Mean (SD) middle = 22.33 (5.07), Mean (SD) family-like = 27.22 (5.09); [$F(2,40) = 2.22, p = .12$]; Social competency: Mean (SD) large = 29.44 (4.66), Mean (SD) middle = 30.50 (3.83), Mean (SD) family-like = 31.13 (7.95); [$F(2,42) = 0.39, p = .68$]; Physical competency: Mean (SD) large = 26.19 (6.76), Mean (SD) middle = 30.50 (7.22), Mean (SD) family-like = 31.22 (7.90); [$F(2,39) = 2.22, p = .12$]; Self-worth: Mean (SD) large = 25.62 (4.48), Mean (SD) middle = 23.50 (6.14), Mean (SD) family-like = 26.00 (8.00); [$F(2,43) = 0.68, p = .51$].

On the other hand, as shown in Table 4, Learning material ($r = .31, p < .05$) and Fostering self-sufficiency ($r = .31, p < .05$) both significantly correlated with children's cognitive competency, and Modeling of Caregiver ($r = .37, p < .05$) significantly correlated with children's sense of self-worth, such that increases in these domains of caregiving provision were associated with stronger competency in both cognitive capability and sense of self-worth in participants (Table 4).

Discussion

In the current study, we used a culturally modified version of the early adolescent HOME inventory to explore whether “soft” measures of caregiving provision captured more variance on adolescent perceived self-competency than official categories of residential care type used in Japan. Although the HOME Inventory has been the most widely used measure for assessing the family rearing environment in many countries, it has rarely been applied to an assessment of out-of-home care provision by the state. Our data showed that CWIs classified as different types of residential care did not vary so much on HOME dimensions, yet different CWIs classified as same type of residential care varied on HOME dimensions. EA-HOME-JP subscales also showed stronger associations with adolescents' self-competency than care type (which did not significantly correlate), suggesting that the HOME inventory can be used as an alternative, complementary approach to the evaluation of residential rearing environments, particularly on “soft” measures. Finally, it was interesting to note that the EA-HOME-JP indexed individual differences in children's experience of their rearing environment that, even amongst individuals sharing the same residential environment, different scores on distinct rearing environments were obtained. Below, we discuss each set of results.

McCall & Groark (2015) have argued that “type of care”, usually quantified on “hard” measures of care provision, is not the same thing as “quality of care” in which indices such as caregiver-child relationship must be considered (Mota & Matos, 2015). Consistent with this suggestion, our study showed that official categories of child CWI defined by the government did not differ significantly on HOME dimensions; yet CWIs grouped within the same category showed significant differences on HOME dimensions. Moreover, our data showed that official categories of care were not significantly associated with children's self-rated competency across domains,

whereas residential caregiving dimensions measured by EA-HOME-JP did appear to capture more meaningful variance. This set of results poses a question to whether ‘institutionalisation’ fully describes the risks for developmental outcomes and the associated well-being of children living in alternative care. Recently, more and more studies of institutional care that are not characterised by global deprivation have found no worse compared to other alternative care in individuals short- and long-term psychological outcomes (Goemans, van Geel, van Beem, & Vedder, 2016; James, 2011; Whetten et al., 2009). One striking example is data from the British Chinese Adoption Study (Feast, Grant, Rushton, Simmonds, & Sampeys, 2013). Researchers compared 100 women adopted as babies from Hong Kong institutions, with age-matched UK woman adopted as infants and a population sample, half a century a. As with Japan institutions, Hong Kong institutions met the basic physical needs of infants. Notwithstanding any sociocultural differences between these three groups, it was found that the experience of early institutionalization made no differences on individual’s functioning in terms of physical and mental health, interpersonal relationship, education, and employment. In another study, Attar-Schwartz (2013) examined institutionalized children’s tendency of running away from residential homes, and found that it was individual’s perceived care climate (e.g., whether or not the young person felt that the institution staff were supportive) that significantly associated with their runaway behaviour rather than institutional level factors such as care type. These findings contrast to those from studies of traditional institutions that neither addressed children’s physical nor emotional needs. These discrepancies suggest the need to consider “softer” aspects of the rearing environment, even within institutions that may be associated with better psychological outcomes in typically-developing families as they do in out-of-home care settings. This hypothesis is supported by interventions studies where improving caregiver’s parenting behaviour and knowledge results in improvement in children’s developmental outcomes (Hermenau, Kaltenbach, Mkinga, & Hecker, 2015; Lyons et al., 2001) and that these positive outcomes are long lasting (McCall, 2013).

Consistent with previous research, our adolescent data also showed that learning materials positively associated with Cognitive self-competency, with a non-significant association with social competency. Fostering self-sufficiency also associated positively with cognitive competencies. Interestingly, caregivers acting as a role models for children in daily life, such as watching TV together, reading newspapers, and disclosing their own life

styles, is related to adolescents' better sense of self-worth. Historically, caregivers were restricted from such home- and parent-like activities. Our result suggests that although caregivers are hired to act professionally, creating a family-like atmosphere may be beneficial to children and young people in care. These results, although preliminary, provides certain insights that child alternative care reform should pay more attention into the relationship between caregivers and adolescents, and their interactions, above and beyond simple size and structure of care provision. Although previous studies have established these findings, these have mainly been conducted in infancy or childhood.

This set of result could inform considerations around the provision of residential care particularly for countries transitioning from large-scale institutional care into family-based alternative care system (Bakermans-Kranenburg et al., 2012), such as Japan. The Japanese government, taking on the response to the international as well as domestic criticism of its heavy reliance on residential care (85% of children in care are placed in residential care as opposed to 15% in foster care), has recently carried out its first major policy reform of the Child Act since the 1940s. The core concept of this reform is "Shokiboka" (Translate: scale down), which aims to reduce one type of care (i.e. big group residential care), and to increase another type of care (i.e. family-like and family-based care). However, our result, together with other recent reports from various countries, poses a fundamental question over whether changing official categories of 'care type' emphasized by policy is enough for bringing a true improvement for children in care without consideration of other distinct caregiving dimensions as reflected in our assessment using EA-HOME-JP. If replicated, our Japan-derived results suggest that improvement on these aspects of care provision, especially those soft-aspects that predicted competency in our data (fostering self-sufficiency, regulatory activities) should be considered when guiding policy reform. In this respect, the finding that the participating residential homes had relatively good provision in certain aspects (e.g., nearly all adolescents had their own space; the majority of children had regular interaction with male caregivers, annual outings such as camping and watching football games), but more variation on other aspects, particularly those that significantly associated with children's perceived self-competency (e.g., associations between children's cognitive competency and the provision of learning material, efforts to promote self-sufficiency, and whether caregivers act as role models for children in their day-to-day interactions), suggest that measuring these latter influences in

residential settings should be considered. Related to this, our descriptive data showed that children exhibited marked variation across each HOME subscale. Although this inter-child variation within the same CWI may simply be reflecting measurement error, it could be evidence that the same environment may not serve as a static feature, but rather are experienced differently according to each child's distinctive needs and temperament. Similar differential experiences of the same family environment have also been found amongst genetically-related siblings (Daniels, Dunn, Furstenberg, & Plomin, 1985). Thus, different children may experience the same environment differently, making the need for individualizing care plans and care provision crucial. Our intention is not to diminish or promote group residential care, but rather suggesting that policy makers need to consider other meaningful care dimensions, within both residential care, and family-based care. It is also important to note that our results are derived from adolescents, and there are robust and consistent results showing that babies are not suitable to grow up in big group settings because of their developmental needs of forming stable and close secure attachment. Our result suggests that the application of HOME inventory in the alternative care scene may have the potential to guide better and individualized practice.

Although this study is a rare attempt to systematically measure different aspects of out-of-home care for adolescents in particular, there are several limitations that need to be addressed so results are interpreted accordingly. First, although a tremendous amount of work was invested in the Japanese cultural adaption of EA-HOME, our aim for the present study was to provide preliminary data to see if the HOME inventory can be further developed into a tool that can be widely used in residential care settings. It is worth mentioning that, the original HOME inventory was developed for normative home environments so may be less reflective of negative and positive aspects of institutional environments. However we aimed to avoid this by running items past care professionals in our development phase. Second, the study sample size was small, reducing the likelihood of detecting significant associations, and therefore committing a Type II error. Hence the results should be considered preliminary, and interpreted with caution. It also limits us from building more complicated models, such as including controlling for other important factors such as an adolescents' sense of security (Hershenberg et al., 2011; Mota & Matos, 2015), biological factors that also contribute to individual's self-competency, or adjusting for the nested nature of the study design. Our data was also cross-sectional. Longitudinal designs will

need to be used to inform us of any chronological changes of how children utilize the rearing environment, and the causal relationships between care provision and children's psychological well-being and other developmental outcomes. Third, our study focused on CWIs within one prefecture. It has been pointed out that there is significant regional variation in Japanese alternative care provision and policy implementation (King, 2017; Zhang, Fukui, & Mori, 2016). Thus, whether the same rearing dimensions link with children's psychological outcomes in other regions is a question that needs to be answered by replication. Another limitation related to this is that in Hyogo prefecture where the study was conducted, family homes, as a new form of residential care that resembles foster care, is still new and relatively rarely implemented compared to other prefectures. In the current study we had to collapse data from these homes with other classic small ward residential care for sample size reasons. This approach may attenuate any effects associated with small-ward residential care. Ideally future studies would sample a relatively equal number of participants from each type of care facility for any comparisons. Future research should aim to validate the EA-HOME-JP with much bigger sample sizes, and sampling in high-risk families or CWIs with a broader range of indices to represent both constructs of the environment and participants' psychological well-being. This will enable us to see whether the findings reported here still hold and also will help to further develop EA-HOME-JP into a tool that can be utilized in practice.

As it is estimated 2.7 million children still live in residential care worldwide (Petrowski, Cappa, & Gross, 2017), gaining more insights into the multidimensional nature of residential rearing has important scientific implications. For countries awaiting the process of "deinstitutionalization" and/or rebuilding a contemporary welfare system, some of these data, if replicated, could have important implications for practice and policymaking.

Conflict of Interest:

none.

Funding body:

Japan Society for the Promotion of Science; China Scholarship Council. These sponsors were not involved in the actual study, including study design, data collection and analysis, and manuscript preparation

References

- Attar-Schwartz, S. (2013). Runaway behavior among adolescents in residential care: The role of personal characteristics, victimization experiences while in care, social climate, and institutional factors. *Children and Youth Services Review*, 35(2), 258-267.
- Bakermans-Kranenburg, M. J., Bunkers, K. M., Dobrova-Krol, N. A., Engle, P., Fox, N. A., Gamer, G., Care, L. C. D. (2012). The Development and Care of Institutionally Reared Children. *Child Development Perspectives*, 6(2), 174-180.
- Bradley, R. H., & Caldwell, B. M. (1980). The Relation of Home-Environment, Cognitive Competence, and IQ among Males and Females. *Child Development*, 51(4), 1140-1148.
- Bradley, R. H., & Caldwell, B. M. (1984a). The Home Inventory and Family Demographics. *Developmental Psychology*, 20(2), 315-320.
- Bradley, R. H., & Caldwell, B. M. (1984b). The Relation of Infants Home Environments to Achievement-Test Performance in 1st Grade - a Follow-up-Study. *Child Development*, 55(3), 803-809.
- Bradley, R. H., Caldwell, B. M., & Corwyn, R. F. (2003). The Child Care HOME Inventories: assessing the quality of family child care homes. *Early Childhood Research Quarterly*, 18(3), 294-309.
- Bradley, R. H., Corwyn, R. F., Caldwell, B. M., Whiteside-Mansell, L., Wasserman, G. A., & Mink, I. T. (2000). Measuring the home environments of children in early adolescence. *Journal of Research on Adolescence*, 10(3), 247-288.
- Browne, K. (2009). *The Risk of Harm to Young Children in Institutional Care*. London: Save the Children.
- Crockenberg, S. C., Rutter, M., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., Juffer, F., Collins, W. A., & The St. Petersburg, U. S. A. O. R. T. (2008). The Effects of Early Social-Emotional and Relationship Experience on the Development of Young Orphanage Children. *Monographs of the Society for Research in Child Development*, 73(3), i-298.

- Daniels, D., Dunn, J., Furstenberg, F. F., Jr., & Plomin, R. (1985). Environmental differences within the family and adjustment differences within pairs of adolescent siblings. *Child Development*, 56(3), 764-774.
- De Swart, J., Van den Broek, H., Stams, G., Asscher, J., Van der Laan, P., Holsbrink-Engels, G., & Van der Helm, G. (2012). The effectiveness of institutional youth care over the past three decades: A meta-analysis. *Children and Youth Services Review*, 34(9), 1818-1824.
- Feast, J., Grant, M., Rushton, A., Simmonds, J., & Sampeys, C. (2013). *Adversity, adoption and afterwards: A mid-life follow-up study of women adopted from Hong Kong*: BAAF.
- Goemans, A., van Geel, M., van Beem, M., & Vedder, P. (2016). Developmental outcomes of foster children: A meta-analytic comparison with children from the general population and children at risk who remained at home. *Child Maltreatment*, 21(3), 198-217.
- Goldfarb, W. (1943). Infant Rearing and Problem Behavior. *American Journal of Orthopsychiatry*, 13(2), 249-265.
- Groark, C. J., McCall, R. B., Fish, L., & Team, W. C. I. E. (2011). Characteristics of Environments, Caregivers, and Children in Three Central American Orphanages. *Infant Mental Health Journal*, 32(2), 232-250.
- Groark, C. J., McCall, R. B., McCarthy, S. K., Eichner, J. C., & Gee, A. D. (2013). Structure, Caregiver-Child Interactions, and Children's General Physical and Behavioral Development in Three Central American Institutions. *International Perspectives in Psychology: Research, Practice, Consultation*, 2(3), 207-224.
- Hermenau, K., Kaltenbach, E., Mkinga, G., & Hecker, T. (2015). Improving care quality and preventing maltreatment in institutional care—a feasibility study with caregivers. *Frontiers in Psychology*, 6, 937.
- Hershenberg, R., Davila, J., Yoneda, A., Starr, L. R., Miller, M. R., Stroud, C. B., & Feinstein, B. A. (2011). What I like about you: The association between adolescent attachment security and emotional behavior in a relationship promoting context. *Journal of Adolescence*, 34(5), 1017-1024.

- Heynen, E., van der Helm, P., Cima, M., Stams, G.-J., & Korebrits, A. (2017). The relation between living group climate, aggression, and callous-unemotional traits in delinquent boys in detention. *International journal of offender therapy and comparative criminology*, 61(15), 1701-1718.
- James, S. (2011). What works in group care?—A structured review of treatment models for group homes and residential care. *Children and Youth Services Review*, 33(2), 308-321.
- Johnson, D. E., Guthrie, D., Smyke, A. T., Koga, S. F., Fox, N. A., Zeanah, C. H., & Nelson, C. A. (2010). Growth and Associations Between Auxology, Caregiving Environment, and Cognition in Socially Deprived Romanian Children Randomized to Foster vs Ongoing Institutional Care. *Archives of Pediatrics & Adolescent Medicine*, 164(6), 507-516.
- McCall, R. B., & Groark, C. J. (2015). Research on Institutionalized Children: Implications for International Child Welfare Practitioners and Policymakers. *International Perspectives in Psychology: Research, Practice, and Consultation*, 4(2), 142-159.
- Japan Ministry of Health Law and Welfare. (2016). *Shakaitekiyogo no Genjo Nitsuite* (Current issues of social care). Tokyo Retrieved from <http://www.mhlw.go.jp/file/06-Seisakujouhou-11900000-Koyoukintoujidoukateikyoku/0000143118.pdf>.
- King, M. (2017). *Child guidance centres in Japan: regional variation in policy implementation and the family-bond*. University of Oxford.
- Lee, B. R., Bright, C. L., Svoboda, D. V., Fakunmoju, S., & Barth, R. P. (2011). Outcomes of Group Care for Youth: A Review of Comparative Studies. *Research on Social Work Practice*, 21(2), 177-189.
- Lyons, J. S., Terry, P., Martinovich, Z., Peterson, J., & Bouska, B. (2001). Outcome trajectories for adolescents in residential treatment: A statewide evaluation. *Journal of Child and Family Studies*, 10(3), 333-345.

- McCall, R. B., & Groark, C. J. (2015). Research on Institutionalized Children: Implications for International Child Welfare Practitioners and Policymakers. *International Perspectives in Psychology: Research, Practice, and Consultation*, 4(2), 142-159.
- Mota, C. P., & Matos, P. M. (2015). Adolescents in Institutional Care: Significant Adults, Resilience and Well-Being. *Child & Youth Care Forum*, 44(2), 209-224.
- Mota, C. P., & Matos, P. M. (2016). Caregivers' Attachment and Mental Health: Effects on Perceived Bond in Institutional Care. *Professional Psychology-Research and Practice*, 47(2), 110-119.
- Petrowski, N., Cappa, C., & Gross, P. (2017). Estimating the number of children in formal alternative care: Challenges and results. *Child Abuse & Neglect*, 70, 388-398.
- Rutter, M. (1998). Developmental catch-up, and deficit, following adoption after severe global early privation. English and Romanian Adoptees (ERA) Study Team. *Journal of Child Psychology and Psychiatry*, 39(4), 465-476.
- Sakurai, S. (1992). The Investigation of Self-consciousness in 5th- and 6th-grade Children (in Japanese). *Japanese Journal of Experimental Social Psychology*, 32(1), 85-94.
- Skeels, H. M. (1966). Adult status of children with contrasting early life experiences. A follow-up study. *Monographs of the Society for Research in Child Development*, 31(3), 1-56.
- Smyke, A. T., Koga, S. F., Johnson, D. E., Fox, N. A., Marshall, P. J., Nelson, C. A., & Zeanah, C. H. (2007). The caregiving context in institution-reared and family-reared infants and toddlers in Romania. *Journal of Child Psychology and Psychiatry*, 48(2), 210-218.
- Sonuga-Barke, E. J. S., Kennedy, M., Kumsta, R., Knights, N., Golm, D., Rutter, M., Kreppner, J. (2017). Child-to-adult neurodevelopmental and mental health trajectories after early life deprivation: the young adult follow-up of the longitudinal English and Romanian Adoptees study. *Lancet*, 389(10078), 1539-1548.

Strijbosch, E., Van der Helm, G., Stams, G., & Wissink, I. (2016). Young Children (4–8 years) in Group Care:

Development and Validation of a Group Climate Instrument. *Child Indicators Research*, 1-12.

Ten Brummelaar, M., Post, W., Arkesteijn, P., Kalverboer, M., Harder, A., & Knorth, E. (2017). Perceived Living

Conditions of Young People in Secure Residential Care: Psychometric Properties of the Best Interest of the Child– Self-Report Questionnaire (BIC-S). *Child Indicators Research*, 1-18.

Tizard, B., & Rees, J. (1975). The effect of early institutional rearing on the behaviour problems and affectional relationships of four-year-old children. *Journal of Child Psychology and Psychiatry*, 16(1), 61-73.

Tizard, B., Tizard, J., Joseph, A., & Cooperman, O. (1972). Environmental Effects on Language Development - Study of Young Children in Long-Stay Residential Nurseries. *Child Development*, 43(2), 337-&.

van der Helm, P., Klapwijk, M., Stams, G., & van der Laan, P. (2009). 'What works' for juvenile prisoners: the role of group climate in a youth prison. *Journal of Children's Services*, 4(2), 36-48.

van IJzendoorn, M. H., Palacios, J., Sonuga - Barke, E. J., Gunnar, M. R., Vorria, P., McCall, R. B., . . . Juffer, F. (2011). I. Children in institutional care: Delayed development and resilience. *Monographs of the Society for Research in Child Development*, 76(4), 8-30.

Vorria, P., Papaligoura, Z., Dunn, J., van IJzendoorn, M. H., Steele, H., Kontopoulou, A., & Sarafidou, Y. (2003). Early experiences and attachment relationships of Greek infants raised in residential group care. *Journal of Child Psychology and Psychiatry*, 44(8), 1208-1220.

Vorria, P., Rutter, M., Pickles, A., Wolkind, S., & Hobsbaum, A. (1998). A comparative study of Greek children in long-term residential group care and in two-parent families: I. Social, emotional, and behavioural differences. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39(2), 225-236.

Whetten, K., Ostermann, J., Whetten, R. A., Pence, B. W., O'Donnell, K., Messer, L. C., . . . Team, P. O. f. O. R. (2009). A comparison of the wellbeing of orphans and abandoned children ages 6–12 in institutional and community-based care settings in 5 less wealthy nations. *Plos One*, 4(12), e8169.

Woodhouse, S., Miah, A., & Rutter, M. (2018). A new look at the supposed risks of early institutional rearing.

Psychological Medicine, 48(1), 1-10.

Zeanah, C. H., Smyke, A. T., Koga, S. F., & Carlson, E. (2005). Attachment in institutionalized and community

children in Romania. *Child Development*, 76(5), 1015-1028. doi:DOI 10.1111/j.1467-8624.2005.00894.x

Zevalkink, J., Riksen-Walraven, J. M., & Bradley, R. H. (2008). The quality of children's home environment and

attachment security in Indonesia. *Journal of Genetic Psychology*, 169(1), 72-91.

doi:10.3200/Gntp.169.1.72-91

Zhang, Y. N., Fukui, Y., & Mori, S. (2016). Japanese Residential Care in Transformation – Implications and Future

Directions. In T. Islam & L. Fulcher (Eds.), *Residential Child and Youth Care in a Developing World* (pp. 87-

107). Cape Town: The CYC-Net Press.

Table 1 *Study variable descriptive statistics.*

Variables	Range	Mean (SD) or %
Child & care characteristics		
Age (years)	10.16 – 17.66	13.74 (1.87)
Gender (female)	-	52.20%
Total time spent in care (years)	8.49 (4.64)	8.49 (4.64)
Care type ^a		
Large-ward CWI	-	54.3%
Middle-ward CWI	-	26.1%
Family-like facilities	-	19.60%
EA-HOME-JP (proportion score)		
Learning material	0.00 – 1.00	0.47 (0.30)
Modelling of caregiver	0.14 – 1.00	0.59 (0.21)
Fostering self-sufficiency	0.44 – 1.00	0.75 (0.22)
Regulatory activities	0.25 – 1.00	0.81 (0.15)
Family companionship	0.20 – 1.00	0.77 (0.23)
Perceived self-competency (PSCS-C)		
Cognitive	15.00 – 35.00	24.51 (5.42)
Social	14.00 – 40.00	30.02 (5.10)
Physical	14.00 – 40.00	28.50 (7.35)
Self-worth	11.00 – 35.00	25.14 (5.69)

Note. ^a Care type: (Family-like facility=1, Middle-ward CWI=2, Large-ward CWI=3).

Table 2 Mean and Standard deviation of EA-HOME-JP subscale scores across care type.

EA-HOME-JP subscales	Large-ward (n=25)	Mid-ward (n=12)	Family-like (n=9)	<i>p</i>
Learning material	0.41 (0.28)	0.42 (0.28)	0.71 (0.28)	*
Modelling of caregiver	0.54 (0.21)	0.64 (0.19)	0.67 (0.20)	ns
Fostering self-sufficiency	0.74 (0.20)	0.70 (0.22)	0.82 (0.26)	ns
Regulatory activities	0.77 (0.22)	0.76 (0.21)	0.83 (0.20)	ns
Family companionship	0.78 (0.25)	0.73 (0.20)	0.78 (0.23)	ns
<i>Note.</i> ns: $p > .05$, *: $.01 < p < .05$.				

Table 4. *Association between EA-HOME-JP and children's self-perceived competency.*

	EA-HOME-JP Subscales				
Perceived self-competency (PSCS-C)	LM	MD	FS	RA	FC
Cognitive	.31*	.00	.31*	.01	.08
Social	.20	.16	.29	.23	.09
Physical	-.06	-.02	-.12	-.273	.12
Self-worth	.16	.37*	0.16	-.09	.11
<p><i>Note.</i> PE: Physical environment; LM: Learning materials; MD: Modelling of caregiver; FS: Fostering self-sufficiency; RA: Regulatory activities; FC: Family companionship; and AC: Acceptance; Non-parametric bivariate correlation significant at: *$p < .05$, **$p < .01$, ***$p < .001$.</p>					

Highlights

- Same rearing environment can be experienced differently by different individuals.
- Residential care quality did not vary with care type.
- Residential homes categorised as same type varied significantly in care quality.
- Care quality, rather than care type, associated with self-perceived competency.

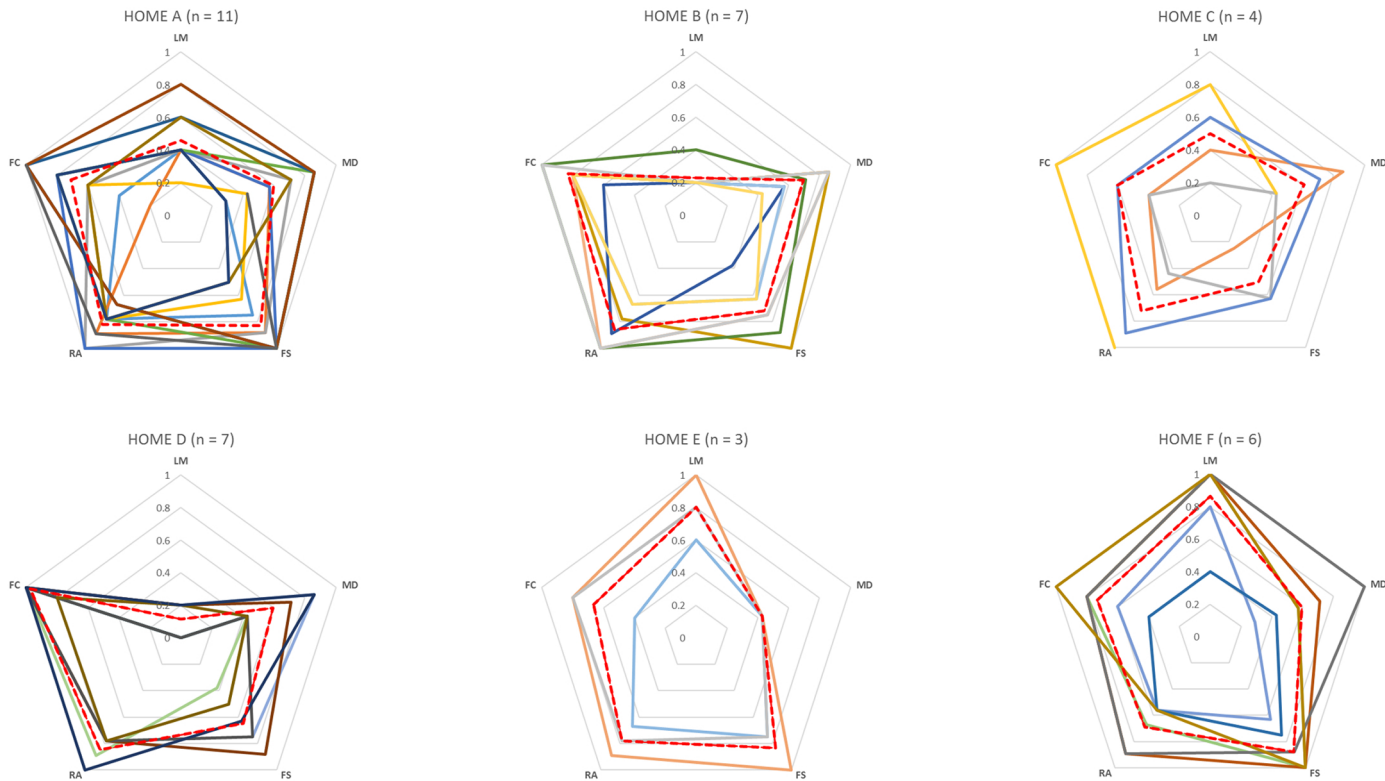


Figure 1